

Chapter 7

Status of Endangered and Threatened Species: Assessment and Recommendations



7.1

Importance of endangered and threatened species to the Chicago Wilderness recovery plan

This plan is concerned with the conservation of biodiversity at all levels—natural communities, species, and genes. The process of assessing this nested diversity seeks to answer basic questions about its status: how much is there or how much remains, what is its quality and viability, what are the trends—stable, increasing, or decreasing? The ultimate goal of assessment is to develop programs that ensure recovery of all the elements of biodiversity. Except for the few species that have been the subject of intensive research or recovery programs, usually those on the federal list of endangered and threatened species, we are just beginning to answer these questions for individual species.

Endangered and threatened species are recognized by federal or state governments as being in danger of extinction or being sufficiently compromised that they are at risk of becoming endangered, either nationally or in a state. Some states, including Wisconsin and Indiana, also categorize species as rare or of special concern.

Because of their rarity, endangered and threatened species possess an aesthetic appeal to the public that cannot be overestimated. In general, rare organisms are valued, the sight of them is genuinely thrilling, and their loss is mourned. A beautiful and conspicuous endangered plant like the eastern prairie fringed orchid can serve as a symbol to enlist public support for all rare species. The recovery of a species can be a success for all to celebrate. A spotting of the rare upland sandpiper can bring birders

from considerable distances simply for the opportunity to view it. (However, caution must be used in providing public access to these organisms so as not to create additional threats to their survival.)

Some species are of special interest because they are relicts, surviving in the region after climatic change. Many more plant species are regionally significant because they are members of characteristic, and often imperiled, natural communities of the region. Additional species are significant because they play key roles in local ecosystems (such as canopy trees or obligate food plants for insects) or simply add to the direct human value of such systems.

Endangered and threatened species make up a substantial component of the region's biodiversity. For example, the 237 plant species listed as endangered or threatened at the state level represent nearly 15% of the region's native plant species. Twelve of these species occurring within Chicago Wilderness are ranked as globally significant, because they occur only within the region and adjacent regions (called "near endemics") or because they are highly rare and imperiled. Of these, five are currently recognized by the US Fish and Wildlife Service as threatened or endangered at the national level.

Among the mammals, birds, reptiles, amphibians, and fish there are 114 state level endangered or threatened species. Five of these are federally listed and several more are federal candidate species.

Quantitative data are available for some aspects of the status of endangered and threatened species, such as numbers of occurrences of populations or subpopulations (known as element occurrences), amounts and types of monitoring being done, and levels of protection. Much of the assessment of their status and future viability is qualitative; nevertheless, it is based on the com-

bined best judgement of researchers and land managers experienced both in studying and managing these taxa. As part of the recovery plan process, the Science and Land Management Teams Endangered Plants Task Force developed a list of endangered and threatened species meriting additional conservation attention. This list is in Appendix 6.

7.2

Endangered and threatened species within a community context

In Illinois, the 1978 Natural Areas Inventory found that less than 1% of the original Illinois landscape (forests, prairies, savannas, wetlands, lakes, and ponds) remained in relatively high-quality, undisturbed condition. Indiana and Wisconsin lands have suffered similarly. This level of community disturbance has had a direct impact on animals and plants. Instead of being dispersed across the landscape, these organisms have retreated to—or survive in—the few remnant areas. Once widespread, native species have become scarce and naturally rare species have become increasingly rare if not extirpated.

This plan focuses on the assessment and appropriate management of communities in order to preserve and enhance the biodiversity occurring within them. The majority of endangered plant and animal species fall within this overall community perspective. The sound management of communities outlined in the Recovery Plan will, therefore, work toward their preservation and eventually their recovery. However, special considerations and concerns arise for endangered and threatened species. This chapter addresses those considerations.

7.3

Why are organisms rare?

Some plant and animal species were always rare in our region because of geographic distribution, narrow habitat requirements, and low-density populations. It is important to ensure that the conditions that support these species persist despite radical changes in land and resource usage.

Many species were once widespread, but have become rare because of habitat loss or fragmentation, fire suppression, encroachment of invasive species, and other

human disturbances. Their plight mirrors that of region's biodiversity in general. Many more native species are also dwindling—the more common species of today could well become the threatened species of tomorrow. By documenting and researching the region's endangered and threatened species, we can learn about the biological and ecological needs of a broad spectrum of flora and fauna. This information also contributes overall to the field of conservation biology.

Many plant species are rare because of their dependence on specialized biological or environmental factors such as specific pollinators, soil microorganisms, hydrological conditions, soil chemistry, or soil parent materials. Many of these factors have been adversely affected over the last century of intensive development. In the case of self-incompatible plants, small, isolated populations lack the pollen from other populations needed for reproductive success. In some cases, rare animals are dependent on a common plant for food, or a rare plant may parasitize another more common plant. Understanding the complex interdependence among organisms is critical to a full understanding of regional biodiversity and its recovery. Recognizing these specialized life histories and the requirements that vary from species to species can help in creating effective plans for their recovery within a community context.

Many species are rare because they are restricted to and are sometimes characteristic of rare and regionally or globally significant habitats such as fens, bogs, seeps and springs, pannes, dunes, dolomite and sand prairies, oak savannas, and shrublands. Some of these habitats may be remnants from earlier climatic or geophysical regimes such as glaciation. The continued presence of healthy populations of these rare species and their associates reflects the quality of these areas today.

Some species are rare within a region because they are at the limits of their range here, but they may be abundant or stable in other areas. These species contribute to biodiversity in important ways, but have less priority in a Chicago Wilderness Recovery Plan because they are less at risk throughout their range.

Some rare plant species require early successional habitats or natural disturbances, such as fire, grazing, drought, soil disturbance, or periodic flooding. These disturbances cause their appearance in sporadic and random ways and give them a niche within high-quality areas. These disturbance requirements must be understood and incorporated into management plans and practices to ensure the survival of these species.

7.4

Threats and stresses to endangered and threatened species

By definition, endangered and threatened species are at risk of being lost from the region. Both state and federal governments recognize the plight of these species and their need for special attention and protection by placing them on endangered and threatened lists. As outlined above, a variety of causes lead to rarity, some of them intrinsic to the biological nature of the species. However, many threats and stressors are strongly correlated with human impacts, which have greatly escalated over the past several decades. Most of these factors negatively affect the region's natural biodiversity, both at the community and species levels. In general, threatened and endangered species are the first to be at risk under these pressures. Threats are imminent problems that have potential to radically change or eliminate a habitat or population. Stressors are the chronic problems that erode diversity and quality of habitats and species over time. As described in Chapter 3, threats and stressors include loss of habitat, fragmentation, fire suppression, invasive species, imbalances of native species, collecting pressures, hydrological change, and other environmental and abiotic factors, including pollution, erosion, and contaminants. Often, rare species have declined due to an interaction of factors. For example, habitat loss multiplies the problems of habitat fragmentation. Fire suppression leads to habitat alteration, invasion of exotic species, and finally to habitat loss. In conjunction with these general threats to communities, individual rare organisms may have additional stressors particular to their life history and requirements. These circumstances must be dealt with in greater depth in any recovery plan for a listed species.

7.5

Protection status of listed species

Protection status is a rough but useful guide to determine priorities. Species that are protected (within Nature Preserves or in some portions of national parks) or semi-protected (on publicly owned conservation lands that may have multiple purposes) have a better chance of being adequately managed or monitored. If 50% or fewer of the sites on which a species occurs are protected, the species is at much greater risk of being lost. Animals, unlike plants, are mobile and in many instances can

move from site to site and are protected while they are on a protected site. On the other hand, as property of the state, animals receive more protection than do plants wherever they are.

Plants

Illinois

- 28.7% of element occurrences (EOs) (209 of 728) have no protection or semi-protection. Most of the unprotected EOs occur on privately owned property.
- 26.8% of the listed species (40 the 149) have 50% or fewer of their EOs protected or semi-protected.

Indiana

(based on records documented since 1979; an additional 39 listed species have not been documented since 1979 or are considered extirpated)

- 44.8% of EOs (189 of 422) have no protection.
- 47.9% of listed species (47 of 102) have only 50% or fewer of their EOs on public lands.

Animals

Illinois

- 58.7% of EOs (285 of 485) of listed animal species are unprotected: 81.1% of fish, 85.7% of mammals, 23.1% of amphibians and reptiles, 57.5% of birds, and 4.3% of invertebrates.
- 60% of listed animal species (33 of 55) have only 50% or fewer of their occurrences protected.

Indiana

(from records documented since 1979)

- 60% of EOs (138 of 238) of listed animal species are unprotected: 100% of fish, 80% of mammals, 43% of amphibians and reptiles, 64% of birds, and 42% of invertebrates (Lepidoptera reported).
- 58% of listed animal species (18 of 31) have only 50% or fewer of their occurrences protected.

7.6

Management and recovery recommendations

Natural-area scientists and restorationists have long since learned that mere protection is not enough to preserve systems and their species adequately. For these rare

species to continue at present levels or to increase, sound management and restoration programs are essential, involving knowledge of the make-up of communities that include rare species and of the means of maintaining their structure and function. While sound community management plans will go a long way towards the conservation and recovery of many endangered and threatened species, some species will always require special management attention, accompanied by a well-designed monitoring program.

Recommendations

- ✓ Acquire more public land to increase the size and number of available habitats. Among the criteria to consider in purchasing land should be the presence of endangered and threatened species; greater emphasis should be placed on land acquisition as a means of protecting rare species. Priority should be given to creating complexes of communities, since many animal species depend on a variety of habitats.
- ✓ Legal protection of plants, in contrast to that of animals, is weak. Enact stronger legislation for the protection of rare native plants.
- ✓ Enlarge and consolidate existing natural communities by creating buffers, or by restoration, to counteract the effects of fragmentation, particularly the isolation of populations of rare species. For some species, such as insects, it is more important to enlarge sites than to create new ones.
- ✓ Increase the levels of protection for unprotected or semi-protected sites with known occurrences of endangered and threatened species. For example, incorporate such sites into the Nature Preserves system.
- ✓ Work with private landowners, either individual or corporate, to protect the endangered and threatened occurrences on their property. Use conservation easements and other incentives to protect endangered and rare resources on private land.
- ✓ In management plans for all sites with endangered and threatened species, include specific provisions to eliminate stresses and threats and to enhance recovery of these species.
- ✓ To measure effects of management activities on rare species, design monitoring programs (for representative populations) to provide feedback to adapt management activities and approaches.
- ✓ Institute a region-wide monitoring program for rare species, implemented by trained volunteers as well as agency staff, to enhance and coordinate current efforts to measure population trends. Protocols should be species-based.
- ✓ Rotate and diversify management treatments in order to maintain a variety of habitats needed by many species.
- ✓ Create a common Chicago Wilderness database. To avoid duplication of research and effort, managers should have access to centralized information about the needs of rare species and management practices related to them for adaptation to their own sites. Linking with Natural Heritage Databases in Illinois, Indiana, and Wisconsin is critical to this process.
- ✓ Expand *ex situ* programs for endangered and threatened plant species so that adequate seed or plant material is available for appropriate reintroduction as more sites are restored.
- ✓ Develop recovery plans for both federal-listed species and state-listed species that have been identified as priorities. The Chicago Wilderness Endangered and Threatened Species Task Force has identified approximately 150 species as priorities for recovery in the region, assigned to six categories (see Appendix 6). The plans should be realistic, suited to the CW region, and workable within county and other regional structures and agencies. Reference should be made to recovery plans already developed or in process for federally listed species as models to be adapted and simplified for state-listed species. Essential elements of these recovery plans include:
 - Historical and present extent of populations (using GIS-based mapping)
 - Occurrences on private and public lands
 - Life history characteristics
 - Identification of stressors, threats, and trends
 - Ecological requirements and availability of appropriate habitats for reintroduction
 - Identification of seed sources and germination and nursery facilities for reintroduction of plant stock; identification of source populations and rearing facilities for reintroduction of animal stock
 - Outline of appropriate management practices
 - Monitoring the effects of management practices as part of a species-based monitoring program
 - Identification of research needs